



## **The Role of the Abandoned Mine Land Unit Land Reclamation Program Missouri Department of Natural Resources**

September 2003

The Missouri Department of Natural Resources' Abandoned Mine Land unit (AML) implements safety measures that save people's lives and protects property while addressing serious environmental problems. AML closes dangerous mine shafts, repairs public roads that have been mined near or beneath their surfaces, reclaims bare land to productive uses such as agriculture, recreation and for wildlife, and restores water quality to streams and ponds, allowing their use for livestock and fishing.



*Barren mine lands pose significant threats to public safety, economic development and environmental quality.*

All AML funds come from the federal government, which collects fees charged to the coal companies. These are dedicated funds that cannot be used for other purposes, with the majority being spent on construction and reclamation activities. If the state withdrew its support and AML ceased to exist, there would be no other agency or funding source to fill this role and serve the extensive areas of Missouri that have been mined in past decades. This program saves Missouri taxes for schools, medical care and roads.



*Acid mine drainage degrades water quality and limits agricultural use.*

Abandoned Mine Land unit projects employ many Missourians who work for small companies, increasing employment and tax revenue and improving the state's economy. AML reclamation activities may cease due to an interpretation of federal rules by the US Office of Surface Mining, Reclamation and Enforcement (OSM). OSM declared that a state could not operate an AML program if it does not have a regulatory program to enforce reclamation laws upon active coal mines in the state. Presently, the Missouri coal regulatory program is not fully funded.



*Restoring water quality is an important function of the Abandoned Mine Land Unit.*

## What Missouri AML Has Done

Since 2000, Missouri AML has:

- Closed 47 dangerous mine openings
- Responded to 7 AML emergencies including such work as: closing one coal mine shaft in a future soccer field complex in Fulton Missouri, stabilized two homes and a public road that were undermined, extinguished a 5-acre coal mine fire that was causing significant health and respiratory problems to nearby residents, and backfilled an eroding highwall that threatened the public utilities of Mindenmines Missouri and travelers' safety along US 160 in Barton County.
- Completed a cooperative reclamation project to remediate acid mine drainage affecting Cedar Creek, which is on the 303(d) list of Impaired Streams.
- Initiated two projects to improve water quality in Deepwater Creek (Henry County) and Gans Creek (Boone County).
- Completed 3 abandoned strip mine projects, removing public safety hazards and environmental problems with 1 additional in construction.
- For more information on projects reclaimed from 1980 to 2002, refer to the document: AML Project Update.



*Native grasses planted at the Prairie State Park reclamation project blend naturally into tallgrass prairie.*

Missouri project staff completed this work with an approximate annual budget of \$2 million. Missouri AML has been very aggressive in completing work and allocating

federal dollars to protecting lives and restoring the environment.

## What Will Be Left Undone

Missouri still has a great many dangerous mine openings and abandoned coal mine sites that pose a threat to public safety. Many of these problem areas impede economic development and agricultural production, and degrade environmental quality.

The Missouri AML inventory of unreclaimed problem areas is very large. Furthermore, new abandoned mine shafts and subsidence events continue to be reported to Department of Natural Resources. Without AML money, abandoned mine problems would continue to affect Missouri citizens but the state and federal governments would have very limited means to help people.

### ***The AML Emergency Program***

Missouri AML receives several calls each year reporting unexpected collapses due to underground mining. These can occur literally overnight in yards, businesses under homes and buildings. AML quickly responds to these problems and others including mine fires, collapsed highwalls and landslides that threaten roads and public utilities. Missouri has many homes, schools and other buildings that have mines located under them. Without AML, timely and effective reaction to these calls and remediation will not occur.



*Burning coal waste poses a serious threat to public safety.*



*Drilling to determine the location of mine voids under this house.*

In spring of 2003, the City of Mindenmines called the Department of Natural Resources to report that a highwall along US 160 was collapsing. The eroding highwall threatened to break the town's electric, telephone and water lines. A collapse would have threatened the highway and required repair costs. AML immediately designed an earth-moving project to stabilize the highwall and save the town's utilities and the public highway.



*Eroding highwall along US 160 threatens the highway and the public utility lines of Mindenmines, Missouri.*

### ***Noncoal Mine Shaft Closures***

Missouri AML received authorization in 1999 from the Governor's Office and OSM to close dangerous mine shafts associated with metallic minerals commonly found in the mining districts of southern Missouri. Many of these mining districts are located in rapidly developing areas of the state. New residents to the area may be unaware of the mining dangers surrounding them. Development will likely continue in these mining districts, increasing the risk that someone may fall into an open mine shaft.



*The sudden opening of this abandoned mine shaft is a public safety issue.*

### ***AML Surface Mine Reclamation Projects***

Although Missouri AML has closed most of the dangerous coal mine shafts, extensive surface mining for coal has produced other public safety and environmental problems that remain unreclaimed. Missouri has over 63,000 acres of abandoned strip mined coal lands yet to be reclaimed. Several public safety and environmental problems caused by strip mining have been inventoried and scheduled for reclamation by the AML unit. The following unfunded projects, in addition to others, remain to be completed:

The **Hanging Pit**, Henry County, is a 6-acre, acidified strip pit lake that hangs over a large impoundment of Honey Creek north west of Clinton. The coal company filled in the lake decades ago with coal waste that generates acid mine drainage and is deadly to aquatic life. Eventually, the acidified lake will overflow or break and acid water and coal waste will flow into the lower impoundment, Honey Creek and eventually into Truman



Lake. The potential impact to the aquatic life in the South Grand River arm of Truman Lake could be immense and result in a significant fishkill. This impact would be a major economic loss to agriculture and recreational businesses in the Truman Lake-Clinton area.

If AML continues to be fully funded, the Missouri AML will investigate reclamation options to remove the threat posed by the Hanging Pit.



*The green acid water of “The Hanging Pit” is perched 20 feet above the freshwater strip pit that flows into Truman Reservoir in Henry County.*

The **Rocky Fork project** (Boone County) is a 15-acre eroding coal waste pile and a 35-acre coal slurry pond that poses a threat to public safety and to water quality in Rocky Fork. This site is located on Missouri Department of Conservation’s Rocky Fork Conservation Area. Erosion cuts have created deep ravines in the coal waste in a highly visited public use area. These 15 to 20 feet deep ravines are very unstable creating significant danger to visitors using public lands. The slurry pond is broke in several locations. If the dam were to break, thousands of tons of coal slurry will enter Rocky Fork and Perche creeks. The creeks are located in a rapidly developed area in Boone County including parts of Columbia.



*Steep, unstable banks are a hazard to hikers and cause acid mine drainage in streams at the Rocky Fork Conservation Area.*

## **The Future**

Missouri AML has been effective in protecting public safety while completing environmental restoration and improving the economic conditions for future generations. Without Missouri AML, no other governmental or private institution will be able to perform this work on a statewide level for the betterment of all the people.

All AML funds are federal dollars, allowing state revenues to be spent on other priorities. If federal AML funds stop flowing to Missouri in the future, several small businesses will be affected and jobs lost if reclamation does not occur. As developments increase near Missouri’s historic mining districts, the risks of falling into an abandoned mineshaft also increase. Missouri AML works for the people, making their lives better while improving Missouri’s environment.

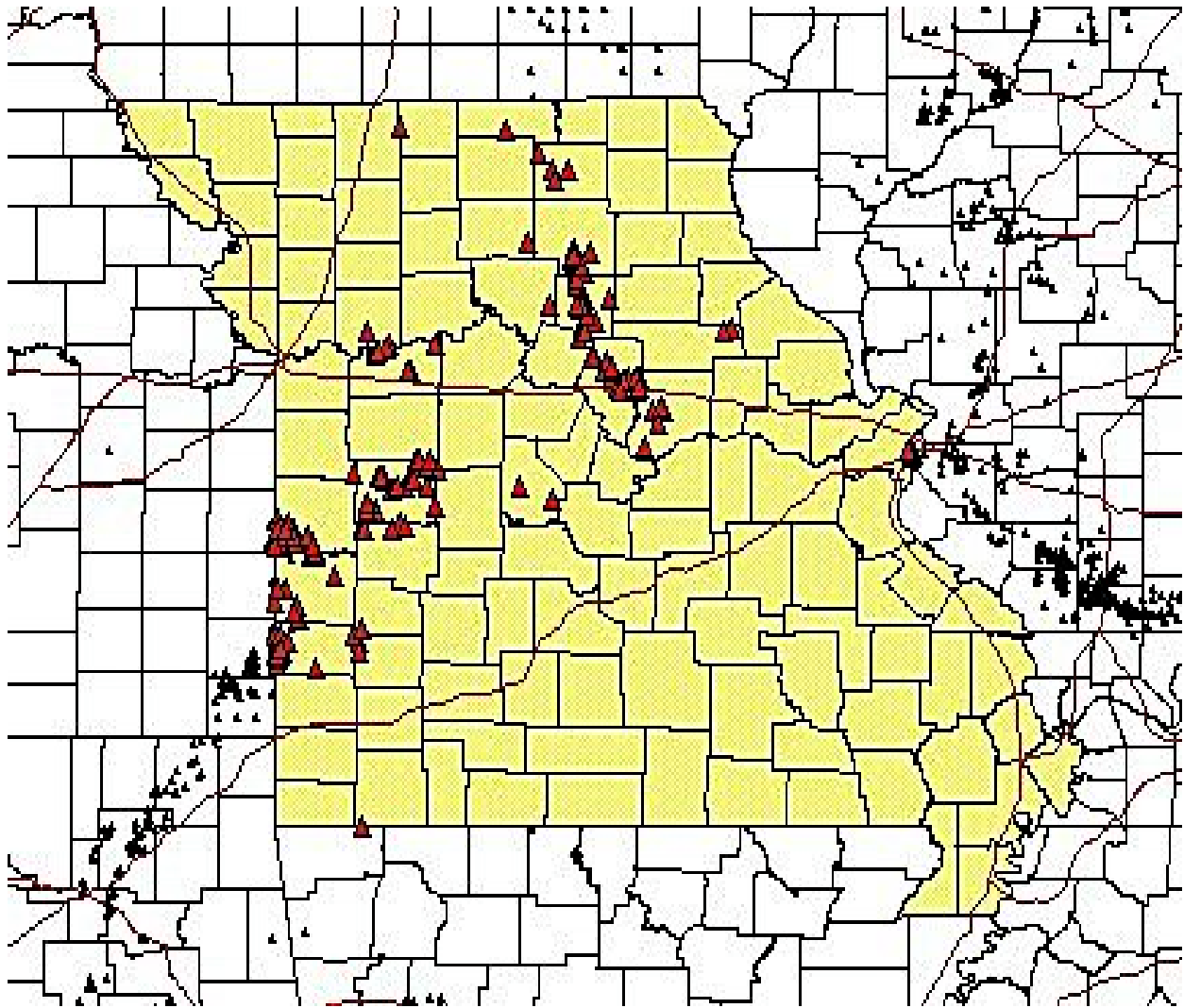
For further information on the Missouri Abandoned Mine Land topic, please visit our web site a [www.dnr.mo.gov/alpd/lrp](http://www.dnr.mo.gov/alpd/lrp) or call the department’s Land Reclamation Program at 1-800-361-4827 or (573) 751-4041.

<b>Remaining Unfunded Abandoned Mine Land (AML) Problems Identified in Missouri's AML Inventory (as of 06/30/03)</b>		
<b>County</b>	<b>Number of Unfunded AML Problem Sites</b>	<b>Amount of Unfunded AML Problems</b>
Adair	7	\$5,080,098
Audrain	4	\$5,236,078
Barton	24	\$8,992,404
Bates	21	\$7,817,128
Boone	20	\$7,111,419
Callaway	13	\$9,632,153
Carroll	1	\$59,750
Cedar	6	\$741,980
Chariton	1	\$30,001
Harrison	2	\$16,402
Henry	30	\$8,202,012
Howard	2	\$415,711
Jasper	5	\$174,000
Johnson	4	\$59,300
Lafayette	7	\$9,044,000
Linn	1	\$527,544
Macon	12	\$8,512,159
Montgomery	1	\$117,366
Putnam	3	\$243,001
Randolph	24	\$8,998,901
Ray	1	\$900,000
Saline	2	\$15,250
St. Clair	11	\$1,397,402
St. Louis, City of	5	\$15,145,000
Vernon	19	\$3,219,638
<b>Totals</b>	<b>226</b>	<b>\$101,688,697</b>



**People and wildlife benefit from effective reclamation.**

## Missouri AML Problem Areas



Red triangles represent general locations of the 234 problem areas in the Missouri AML inventory.

**AML Project Update  
September 25, 2003**

<b>Project Title</b>	<b>County</b>	<b>Acreage</b>	<b>Construction Cost</b>	<b>Cost Per Acre</b>	<b>Year Completed</b>
Allen Shaft	Henry	1 shaft	\$7,762		1986
Appleton City	St. Clair	7	\$69,675	\$9,954	1992
Ardath-Massa	Barton	83	\$701,521	\$8,452	1986
Bear Creek	Henry	18	\$244,293	\$13,572	1999
Bill's Coal (AML portion)	Vernon	35	\$409,203	\$11,692	1999
Bison	Barton	107	\$821,195	\$7,675	1996
Blaze Creek	Randolph	2 shafts	\$8,935		1898
Block/DeJonge	Randolph	44	\$374,981	\$8,522	1990
7126 Bruno Subsidence	St. Louis	Explor. Drilling	\$6,804		1999
Cainsville	Harrison	1 shaft	\$62,991		1996
Chaney Branch	Dade	32	\$338,575	\$10,580	1992
Chapman	Henry	2 shafts	\$4,500		1994
Childress Subsidence	St. Louis	Grouting	\$7,717		1997
Claybank Creek	Randolph/Macon	7	\$127,517	\$18,217	1997
6900 Clayton Subsidence	St. Louis	Explor. Drilling	\$7,014		2002
Clemens Gob	Barton	47	\$630,590	\$13,417	1986
Creighton	Cass	2 shafts	\$13,038		1994
Cross Mitchell & Tipple	Boone/Callaway	150	\$1,377,890	\$9,186	1985
Crutchfield	Randolph	162	\$1,213,004	\$7,488	1990
6241 Dale Subsidence	St. Louis	Explor. Drilling	\$6,241		2002
Daugherty	Barton	60	\$437,374	\$7,290	1988
Ellis Coal	Vernon	105	\$509,461	\$4,852	2001
Finger Lakes	Boone	17	\$238,893	\$14,053	1992
Frost/Calfee	Randolph	7 shafts	\$19,795		1996
Fulton	Callaway	26	\$630,744	\$24,259	1999
Germantown	Henry	663	\$4,017,298	\$6,059	1988
Gipson-Owings	Randolph	25	\$354,419	\$14,177	1992
Godfrey Drift	Cedar	4 shafts, 1 well	\$1,500		2001
Gray	Henry	10	\$88,344	\$8,834	1995
Greasy Mine (hematite)	St. Francois	1 shaft	\$2,999		2002
1472 Gregg Subsidence	St. Louis	Grouting	\$11,399		1998
Harkes Gob	Randolph	25	\$224,626	\$8,985	1989
Harmony School Shafts	Bates	5 Shaft/Well	\$4,505		1999
Hickory Hill Shafts	Bates	2 shafts	\$3,524		2000
Hidden Valley Shaft	Callaway	1 Shaft	\$805		2000
Higginsville	Lafayette	7 Shafts	\$1,784		1996
Highway 160	Barton	7900 LF	\$188,361		1985
Highway F	Vernon	1675 LF	\$65,897		1991
Highways A & V	Bates	4 Sites	\$242,268		1989
Hime-Taylor-Turner	Cedar/Dade/Barton	22	\$103,062	\$4,685	1988
Honey Creek	Henry	32	\$654,796	\$20,462	1995
Huntsville-Colo	Randolph	50	\$788,705	\$15,774	1984
Huntsville Gob Phase I	Randolph	22	\$2,443,784		1990
Huntsville Gob Phase II	Randolph	37	\$1,090,046	\$29,461	1994
Jasper Co.Pb/Zn Shafts(demo)	Jasper	5 shafts	\$9,200		2002
Jasper Co. Pb/Zn Shafts I	Jasper	12 shafts	\$103,300		2002
Joe Baiotto	Adair	1 shaft	\$4,768		1988
J.W. Evans	Henry/Benton	43	\$368,501	\$8,570	1989
Keota Gob	Macon	40	\$521,067	\$13,027	1989

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Manacle Creek	Callaway	197	\$1,032,725	\$5,242	1988
5573 Mardel Subsidence	St. Louis	Grouting	\$11,994		1998
6629 Marmaduke Subsidence	St. Louis	Explor. Drilling	\$3,031		1999
McKee Shaft	Macon	2 shafts	\$4,890		1990
Middle River	Callaway	114	\$835,186	\$7,326	1990
Middle River (Maintenance)	Callaway	0	\$6,828		1993
Mindenmines	Barton	12 shafts	\$7,482		1996
Mindenmines (Phase II)	Barton	37 Wells	\$12,720		1997
Montee	St. Clair	78	\$647,295	\$8,299	1987
Moore's Branch	Vernon	26	\$133,569	\$5,137	1999
Nannemann	Henry	60	\$687,757	\$11,463	1986
North Weyer Shafts	Macon	4 shafts	\$10,874		2000
5340 Neosho Subsidence	St. Louis	Explor. Drilling	\$5,851		1999
Old Bevier	Macon	46	\$932,090	\$20,263	1992
Old Bevier Wetland	Macon	1 wetland	\$213,219		2001
Osage Township(Emergency)	Bates	Grouting	\$24,626		2001
Otter Creek	St. Clair	75	\$955,964	\$12,746	1998
Panama	Vernon	48	\$544,579	\$11,345	1986
Perry Mine Fire (Emergency)	Monroe	5	\$24,165	\$4,833	2001
Phillips-Rasmussen	Randolph	8	\$23,888	\$2,986	1982
Pigg Hill/Willard Hart	Henry/Benton	4 shafts	\$17,862		1989
Prairie State Park	Barton	47	\$933,996	\$19,872	1987
Purvis Shaft	Cedar	1 shaft	\$3,432		1990
Reese	St. Louis	Grouting	\$21,338		1997
Reliance Shop	Henry	72	\$585,447	\$8,131	1989
Republican Shaft	Lafayette	3 shafts	\$3,940		1990
Rich Hill	Bates	10 shafts	\$172,026		1997
Robinson Branch	Vernon	68	\$1,138,328	\$16,740	1987
5700 Rosa Subsidence	St. Louis	Explor. Drilling	\$5,894		2001
Route A	St. Clair	1420 LF	\$46,262		1992
S.W. Fulton	Callaway	3 shafts	\$9,105		1996
Sawmill	Bates	98	\$578,121	\$5,899	1986
Shaw	Vernon	5	\$8,603	\$1,721	1993
Silver Fork	Boone	1	\$6,940	\$6,940	1983
Silver Fork Portals	Boone	3 Shafts	\$2,750		1997
Sprague	Bates	28	\$308,804	\$11,029	1998
Stover	Morgan	15	\$157,804	\$10,520	1995
Stump	Dade	37	\$271,991		1997
Sweet Springs	Randolph	11	\$196,175		1994
Swimming Pit	Barton	12	\$99,649	\$8,304	1992
Tebo Creek	Henry/Johnson	440	\$4,521,420	\$10,276	1996
Teter Shaft	Macon	2 shafts	\$9,000		1990
Thousand Hills	Adair	5 shafts	\$3,528		1991
Tiger	Bates	171	\$1,566,932	\$9,163	1986
Tiger (Maintenance)	Bates	0	\$6,463		1991



AML Project Update September 25, 2003					
Project Title	County	Acreage	Construction Cost	Cost Per Acre	Year Completed
Windsor	Henry	27	\$153,343	\$5,679	1993
Tightwad/Pierce	Henry	20	\$273,365	\$13,668	1995
Turner Shafts	Barton	7 shafts	\$6,500		2000
Turner/Valle	Barton/Dade	15	\$116,573	\$7,772	1999
TOTALS		3,558	\$36,908,993		

Completed Projects Under 1 Year Wwarranty or Maintenance				
Project Title	County	Acreage	Construction Cost	Expiration Date
Noah	Henry	35	\$254,414	11-06-2003
Jasper Co. Pb/Zn Shafts II	Jasper	10 shafts	\$73,450	5-29-2004
Schmidt Pb/Zn Shaft	Franklin	1 shaft	\$2,200	4-28-2004
Fulton YMCA Shaft(Emerg.)	Callaway	1 shaft	\$5,617	6-9-2004
Pope Pb/Zn Shaft	Jasper	1 shaft	\$21,274	8-15-2004
Lyday Subsidence (Emerg.)	Barton	grouting	\$14,396	9-3-2004
TOTAL			\$371,351	

Projects Under Construction				
Project Title	County	Acreage	Construction Cost	% Completed
Mindenmines Emerg Highwall	Barton	35	\$268,400	45%
Lemons	Putnam	8	\$61,985	95%
Gans Creek	Boone	3	\$18,853	95%
Perche Creek	Boone	40	\$545,000	0%
TOTAL			\$894,238	